

## Chien-Chang Hsu\*: Notes on the grasses of Formosa (1)

許建昌\*: 台灣産イネ科植物雜記 (1)

Several papers dealing with some species of Formosan grasses have been published, but no comprehensive study was made for the grasses of Formosa. Either in the form of notes or monographic treatment, Honda (1930), Ohwi (1941—1942) and recently Keng (1959) published their works partially mentioning the grass flora of the district. In Honda and Ohwi's papers, detailed synonymy and keys were put out for vast areas of Japan, including Korea, Liukyu and Formosa: yet now-a-day, new additions or some changes are badly needed to the works mentioned due to the recent advancement in the agrostology. New records, reasonable combinations, change of ranks and brief studies of some critical species together with new taxa will be presented in this issue.

In the course of studies, first of all, I am deeply indebted to Prof. H. Hara who gave me uncountable directions and encouragements. Thanks are also due to the members of Japanese Himalayan expeditions and Dr. T. Tateoka, who allowed me to check on the specimens which were collected from Laos, Thailand, Ceylon and India for comparison. Prof. Hayata's Indo-Chinese grasses were cleared out for me by Dr. T. Yamazaki. These valuable materials enabled me to make my study more easily.

1. ***Ischaemum aristatum*** Linn., Sp. Pl. 2: 1049 (1753).

*I. sieboldii* var. *formosanum* Hack. in Bull. Herb. Boiss. Ser. II, 4: 527 (1904).

*I. hondae* Matsuda in Bot. Mag. Tokyo 27: 106 (1913).

*I. crassipes* var. *formosanum* (Hack.) Nakai in Bot. Mag. Tokyo 33: 2 (1919).

*I. crassipes* var. *aristatum* Nakai ex Honda in Bot. Mag. Tokyo 37: 121 (1923) et 38: 53 (1924).

*I. hondae* var. *tomentosum* Honda in Bot. Mag. Tokyo 37: 121 (1923) et 38: 53 (1924).

According to Bor (ex Hubbard 1960), there are two sheets of the Linnean type specimens. The one, 1214-2, agrees best with the original description of *Ischaemum aristatum*, and the other, 1214-3 which has much smaller spikelets,

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is referable to *I. indicum* (= *I. ciliare*). *I. ciliare* has been considered as a synonym of *I. aristatum*.

This species resembles both *I. indicum* and *I. crassipes*, but differs from the former by glabrous nodes, straight awn less than 10 mm long with the column scarcely exerted from the sessile spikelets, and by the shortly awned (or awnless) pedicelled spikelets. It differs from the latter by having broadly winged first glume of the sessile spikelet (Fig. 1) and the chromosome number ( $2n=72$ , Chen, unpublished) instead of linear, narrowly winged first glume and  $2n=56$

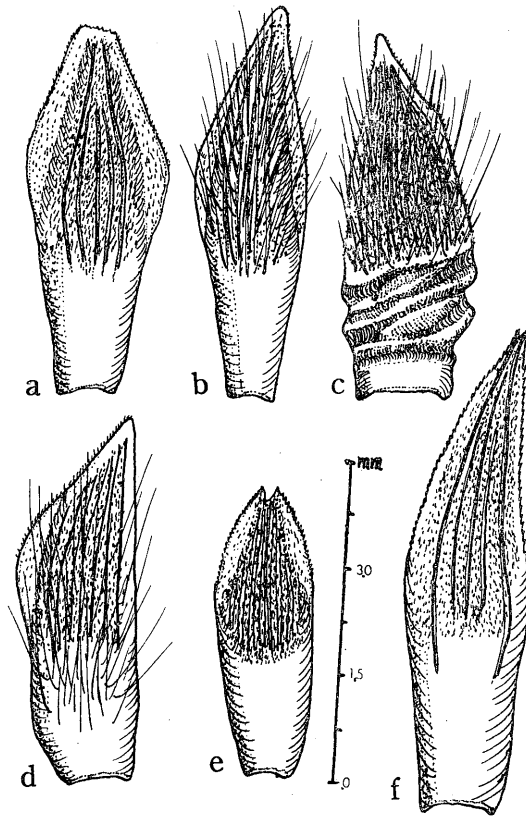


Fig. 1. The first glume of the sessile spikelet.

a. *Ischaemum aristatum* Linn. b. *Ischaemum aristatum* var. *momiyamai* (Honda) Hsu. c—d. *Ischaemum barbatum* var. *gibbum* (Trin.) Ohwi: c, the sessile spikelet; d, the pedicelled spikelet. e. *Ischaemum indicum* (Houtt.) Merr. f. *Ischaemum crassipes* (Steud.) Thell.

(Moriya and Kondo, 1950) chromosomes. On the distribution of this species, as far as our materials are concerned, it has the northernmost limit at southern Japan.

As to the presence of awn, it is variable. On one sheet (Doi 119, TI) which was collected at Yakushima, Hubbard noted *I. aristatum* Linn. and furthermore he remarked "this specimen represents the same variant of the species as the type in the Linnean Herbarium, sheet 1214-2". The specimens collected from Formosa quite agree with Doi 119. This seems to be the same as *I. hondae* of Chinese mainland.

One form which is pilose on the backside of the first glume of the sessile spikelets is found. It is known from Formosa, Liukyu, south China and south Japan (Yakushima) as far north as the Tokyo Bay (Hara 3202). The hairiness of the leaves is varied from glabrous, pilose to villose, but usually glabrous.

***Ischaemum aristatum*** var. ***momiyamai*** (Honda) Hsu, comb. nov.

*I. villosissimum* Honda in Bot. Mag. Tokyo **41**: 8 (1927) et Monogr. 359 (1930).

*I. crassipes* var. *momiyamai* Honda, Monogr. 355 (1930).

There are some arguments on the presence of nodules on the lower part of the first glume in a so-called "*I. aristatum*". But no record can be found on the presence of nodules in the original description. Nodule-bearing so-called "*I. aristatum*" is distributed in Malaysia, Formosa and south China. I agree with Ohwi and Jansen in adopting the name *Ischaemum barbatum* for the nodule-bearing species. Var. *gibbum* (Trin.) Ohwi and its forma *nodulosum* Ohwi are commonly found in Formosa.

2. ***Ischaemum indicum*** (Houtt.) Merr. in J. Arn. Arb. **19**: 320 (1938); Bor, Grass. India, etc. 180 (1960).

*Phleum indicum* Houtt. Nat., Hist. II. **13**: 198, t. 90, f. 2 (1782).

*I. ciliare* Retz., Obs. Bot. **6**: 36 (1791).

*I. scrobiculatum* Wight et Arn. ex Steud., Syn. Pl. Glum. **1**: 373 (1854).

*I. ciliare* var. *scrobiculatum* (Wight et Arn.) Honda, Monogr. 361 (1930).

*I. aristatum* Linn. var. *scrobiculatum* (Wight et Arn.) Jansen in Act. Bot. Neel. **2**: 382 (1953).

*I. guianense* (Kunth) sensu auct. Japon.

*I. aristatum* (Linn.) sensu Ohwi in Act. Phyt. Geob. **11**: 174 (1942).

Due to the confusing interpretation of the Linnean type, this species has been mixed with *Ischaemum aristatum* which has much larger spikelets and

taller plant body. As explained under *I. aristatum*, Hubbard suggested that this species is *Ischaemum indicum* (= *I. ciliare* Retz.).

This species is variable in its features. Several varieties were set down by some authors, but because of many intermediates in the species, there are no distinct lines to separate the varieties.

Usually it has two racemes, but rarely three racemes may be seen in a

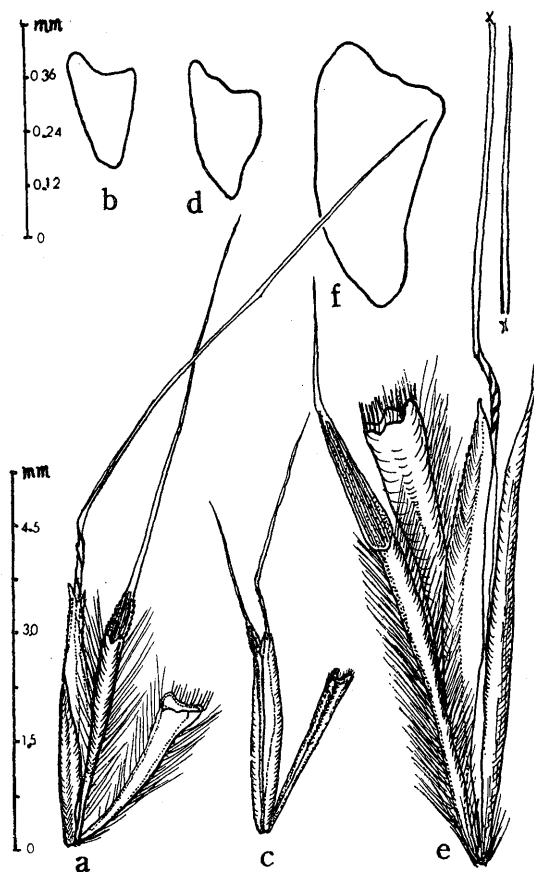


Fig. 2. A pair of the spikelet. a—b. *Schizachyrium fragile* var. *shimadae* (Ohwi) Hsu: a. a spikelet with a pedicel and rachis joint. b. a lodicule. c—d. *Schizachyrium brevifolium* (Sw.) Nees: c. a spikelet with a pedicel and rachis joint; d. a lodicule. e—f. *Schizachyrium sanguineum* (Retz.) Alston: e, a spikelet with a pedicel and rachis joint; f, a lodicule.

few specimens. The spikelets are easily infected by the smut diseases and distorted in its figures.

3. **Schizachyrium fragile** (R. Br.) A. Camus var. **shimadae** (Ohwi) Hsu, comb. nov.

*Andropogon shimadae* Ohwi in Act. Phyt. Geob. **4**: 58 (1935) et **11**: 168 (1942).

*Schizachyrium shimadae* (Ohwi) Ohwi, l. c. **6**: 151 (1937).

Jansen criticized the south-east Asiatic species and varieties of *Schizachyrium fragile* in Reinwardtia **2**: 336—339 (1953). The main characters of the four varieties reviewed by Jansen may be summarized in the following chart (with an additional note on var. *shimadae*):

var.	rachis joint	first glume of sessile spikelet	pedicel	distribution
<i>fragile</i>	glabrous	glabrous	ciliate	Malaysia, general
<i>malayanum</i>	glabrous	glabrous	glabrous	Malaysia, general
<i>luzonicense</i>	glabrous	pilose	ciliate	the Philippines
<i>sinense</i>	ciliate	pilose	ciliate	Southern China
<i>shimadae</i>	ciliate	glabrous	ciliate	South Formosa

The variety *shimadae* differs from the other varieties by the ciliated rachis joints and pedicels and the glabrous first glume of the sessile spikelets. Known only from Chi-shan (旗山).

*Schizachyrium sanguineum* (Retz.) Alston reported from India, Ceylon, Burma and China resembles *S. fragile* var. *shimadae*, but has about 7 mm long spikelets (Fig. 2.).

4. **Narenga porphyrocoma** (Hance) Bor in Indian Forest **66**: 267 (1940).

*Saccharum narenga* Hamilton in Wallich, Cat. no. 8856 (1848), nomen.

*Eriochrysis porphyrocoma* Hance ex Trin. in J. Bot. **14**: 294 (1876).

*Saccharum porphyrocoma* (Hance) Hack. in DC., Monogr. Phan. **6**: 120 (1889).

The genus *Narenga* has been included in *Saccharum*. It is characterized by the coriaceous glumes. Bor's description and discussion (in Kanjilal et al., Fl. Assam **5**: 315—318 (1940)) indicated that the fertile lemma is awnless in this newly established genus. However, he widened the generic characters to

include the species with awned spikelets.

In our specimens, the fertile lemmas are usually acuminate and the mid-ribs are ending in a short projection. The whole panicle is golden-brown in color. The dorsal part of the first glume is sparingly pilose.

5. ***Imperata cylindrica*** (Linn.) P. Beauv. var. **major** (Nees) C. E. Hubbard ex Hubb. et Vaughan, Grass. Maur. 96 (1940); Reeder in J. Arn. Arb. 29: 327 (1948); Keng, Fl. Ill. Sinicarum Gram. 755 (1959); Bor, Grass. India, etc., 170 (1960).

C. E. Hubbard proposed five varieties under *Imperata cylindrica*. It is said that each of them has a rather definite geographic distribution correlated to their gross morphology (in Imp. Agric. Bur. Joint. Publ. 7: 5—13 (1944), not seen). Among them the variety *major* is applied to our specimens.

*Imperata* is one of the specialized group of grasses having reduced numbers of stamens. Usually it is two, but in *I. conferta*, the stamen may be reduced to only one. The lodicules disappeared in our specimens. The specimen (Keibio, July 1, 1919, Hayata, TI) cited as *I. exalata* by Honda (1930) is but a form of *I. cylindrica* var. *major*. It differs from var. *major* in having the glabrous base of the blade and the rather prolonged ligules.

6. ***Capillipedium kwashotensis*** (Hay.) Hsu, comb. nov.

*Andropogon kwashotensis* Hay., Ic. Pl. Formosa 7: 80 (1918).

*Bothriochloa kwashotensis* (Hay.) Ohwi in Act. Phyt. Geob. 11: 168 (1942).

Due to the similarity in the structure of spikelets between *Bothriochloa* and *Capillipedium*, Ohwi united both genera under *Bothriochloa*. As to their nature of inflorescence, however, they are separable. *Bothriochloa* has less divided primary branches which bear more than 8-jointed racemes, whereas in *Capillipedium* the primary branches are capillary in themselves and are furthermore much divided into capillary branchlets terminating in a few jointed racemes.

This is a small littoral species of little known. Only collected from Botel Tobago (Hung Tou Yü, 紅頭嶼), Green Island (綠島, 火烧島), southernmost Formosa and Iriomote Is., Liukyu. The rhizomes are well developed and are covered by the bladeless overlapping leaves. It can stand on salt water.

7. ***Capillipedium assimile*** (Steud.) A. Camus in Lecomte, Fl. Gén. de Indo-Chine 7: 314 (1922); Jansen in Reinwardtia 2: 251 (1953); Bor in Kew Bull. 1952: 165 et Grass. India, etc., 110 (1960).

*Andropogon assimilis* Steud. in Zoll., Syst. Verz. 58 (1854) et in Syst. Pl.

Glum. 1: 397 (1854).

*Andropogon glaucopsis* Steud. in Syn. Pl. Glum. 1: 397 (1854).

*Capillipedium glaucopsis* (Steud.) Stapf in Hook., Ic. Pl. sub tab. 3058 (1922);  
Keng, Fl. Ill. Sinicarum Gram. 827 (1959).

*Bothriochloa picta* Ohwi in Act. Phyt. Geob. 11: 167 (1942).

*Capillipedium pictum* Ohwi, in sched. l. c. (1942).

*Capillipedium assimile* var. *glaucophyllum* (Henr.) Jansen l. c. (1953).

Ohwi described *Bothriochloa picta* from Formosa and Kwantung (Lau, no. 2758, TI). In the present study, it is confirmed that this is nothing but a widely distributed species, *Capillipedium assimile*, known from Celebes, the Philippines and extending to China and Formosa.

This species was much confused with *Capillipedium parviflorum* and was often misidentified. It is common in the mountainous regions throughout the Island, especially in open rocky places near streams. The culms are bamboo-like, with a creeping woody rhizome. The branches are ascending, and the axils of the panicle are long ciliated. The leaves are linear-lanceolate and usually somewhat farinose. While in *C. parviflorum*, it grows on plains and the culms are erect, sparingly branched, and more or less robust in habit. The nodes are much hairy and the sheaths are not loose and slipping as in *C. assimile*. Var. *glaucophyllum* was separated by several authors due to the fact that the upper nodes are hairy and the leaves are glaucous. Yet in our specimens, the degree of the hairiness of the nodes or white powders on the leaves varies to some extent.

最近台湾産イネ科植物の標本を色々見る機会があったので、その一部をノートの形として紹介したい。本田、大井両博士の名著 (1930; 1941—42) で、台湾を含む旧日本のイネ科は詳細に研究された。しかし附加される種類や余儀なく変更される部分も出て来たので、帰化植物を含めて、混同し易い属や種には異同と変異を記して後日の参考とした。本研究にあたって日頃教示を載いた原寛教授、台湾を始めヒマラヤ、タイ、インドシナの標本の使用を許された各腊葉庫の方々並びにインド、セイロン等の腊葉を貸与して下さった館岡亜緒博士に感謝する。

1. ハッパード氏の再検でリンネのタイプは *Ischaemum aristatum* (no. 1214—2) と *I. indicum* (no. 1214—3) が交っている事が分った。*I. aristatum* は台湾、琉球、中国大陸中南部に分布し、*I. indicum* より小穂が大ききリンネの原記載と良く一致する。翼幅の広い第一苞穎と  $2n=72$  の染色体数で華北、朝鮮及び日本に分布するカモ

ノハシ (*I. crassipes*) と区別される。第一苞穎の背面に長毛を有するハヤマカモノハシを var. *momiyamai* とし、本種の一変種として扱った。この変種は台湾北部から飛んで日本の相模、上総で採集されている (Fig. 1)。

2. ヒメカモノハシは節毛を有し小穂が小さく芒が発達している。従来 *I. ciliare* に当てられ *I. aristatum* の異名として長く使われた。変異性に富み台湾では普通に見られる雑草である。学名としては *I. indicum* を使い前種との混同を避けたい。

3. ウシクサ (*Schizachyrium brevifolium*) に似ているが葉は漸尖形で小穂軸と小穂柄には長毛を有し、無柄小穂の第一苞穎は無毛である (Fig. 2 参照)。フィリッピンや中国南部のものとは違い、変異を認めて変種とした。

4. ムラサキワセオバナ属はボー氏によって新設された属で従来サトウキビ属に入っていた。革質でかつ長毛を有する苞穎は他のサトウキビの類と区別される。大井博士は節として扱っている。

5. ハッパード氏の研究で東亜産のチガヤはこの学名に変更されることになった。台湾産の標本では雄蕊が2本あり、鱗片を欠いている。

6. 小穂の構造で区別がつかないので、大井博士は *Capillipedium* を独立させずに *Bothriochloa* に統合した。しかし花序の枝が何回か分枝して毛細状になり、その先に8節以下の穂をつける点で *Bothriochloa* と異なる。本種は小穂の数が少なく、花序も毛細状になるので *Capillipedium* に入れた。

7. 新種として発表されたが結局南洋、インドシナ等に広く分布する本種に外ならない。山地に生じて稈は木化し多少斜上する。花序枝腋の長毛も特徴をもち、平地に見られる *C. parviflorum* と区別される。節毛や植物体の粉白の程度はかなり変化する。

□室井 緯：有用竹類図説（特に形態及び利用）22cm×15cm, 402 pp. 1962. 六月社 1,600. 多年竹類に親んできた室井氏の著で、竹類研究史、竹類における一般形態的特性、分類上の基礎となる形態的特性、有用竹類の形態学的特性、園芸学上より見た竹類、食用及び飼料としての竹笹、綜合考察及び結論の8編より成り、本文中の挿図182中には1頁大の写生図89を含み、おもな種類が示されている。第4編第4章は162頁より成り第1節竹の部と第2節笹の部に分け、著者はここに分類的重点をおいたようで1頁大の図の多くはここに集まっているので研究するには大いに役立つであろう。竹の数は室井氏によれば14属662種もあるというのだから、この一冊ですべてがわかるとも思われないが、杉本順一氏の日本樹木総検索誌（六月社出版）中で室井氏が分担したタケササ亜科の部を併用すれば大綱に通じ得られよう。もっとも竹笹には室井氏のいうようにこれを識別するに難点があり、自から相当の予備的の土台がないとむづかしいので、この本1冊あれば直ちにすべての竹が一挙にわかるというわけにはゆくまい。（久内 清孝）